

WHAT IS CLAIMED IS:

1. A semiconductor device comprising a SiC substrate and an ohmic electrode,
wherein a semiconductor member including a SiC member and a SiGe
5 member is formed between the SiC substrate and the ohmic electrode.
2. A semiconductor device according to claim 1, wherein the semiconductor
member is composed of a SiGe member formed on a SiC member, and the
ohmic electrode is formed on the SiGe member.
- 10 3. A semiconductor device according to claim 1, wherein the semiconductor
member is composed of a Si member formed on a SiC member and a SiGe
member formed on the Si member, and the ohmic electrode is formed on the
SiGe member.
- 15 4. A semiconductor device according to claim 1, wherein in the semiconductor
member, a mole fraction is varied continuously from SiC to Si and from Si to
SiGe, and the ohmic electrode is formed on the semiconductor member.
- 20 5. A semiconductor device according to claim 1, wherein the semiconductor
member is composed of a semiconductor member in which a C mole fraction is
decreased while a Ge mole fraction is increased continuously from SiC to SiGe,
and the ohmic electrode is formed on the semiconductor member.
- 25 6. A semiconductor device according to claim 1, wherein the semiconductor
member is formed on both a p-type region and an n-type region.
7. A semiconductor device according to claim 1, wherein a gate electrode is
formed on the SiC member.
- 30 8. A semiconductor device according to claim 7, wherein the gate electrode is
formed on a Si oxide film.
9. A method for producing a semiconductor device, comprising: forming a
35 semiconductor member including a SiC member and a SiGe member on a SiC
substrate by crystal growth; and forming an ohmic electrode on the
semiconductor member.

10. A method for producing a semiconductor device according to claim 9, wherein the process of forming the semiconductor member by crystal growth includes forming a SiGe member on a SiC member by crystal growth.

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11. A method for producing a semiconductor device according to claim 9, wherein the process of forming the semiconductor member by crystal growth includes forming a Si member on a SiC member by crystal growth; and forming a SiGe member on the Si member by crystal growth.

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12. A method for producing a semiconductor device according to claim 9, wherein the process of forming the semiconductor member by crystal growth includes forming a semiconductor member, in which a mole fraction is varied continuously from SiC to Si and from Si to SiGe, on a SiC member by crystal growth.

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13. A method for producing a semiconductor device according to claim 9, wherein the process of forming the semiconductor member by crystal growth includes forming a semiconductor member, in which a C mole fraction is decreased while a Ge mole fraction is increased continuously from SiC to SiGe, on a SiC member by crystal growth.

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14. A method for producing a semiconductor device according to claim 9, wherein the semiconductor member is formed on both a p-type region and an n-type region by crystal growth.

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15. A method for producing a semiconductor device according to claim 9, comprising forming a gate electrode on the SiC member.

30 16. A method for producing a semiconductor device according to claim 15, wherein the gate electrode is formed on a Si oxide film.